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PIAP

MOBILE ROBOTS
& SPECIAL USE EQUIPMENT

IEDD.EU

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PIAP GRYF®

EOD mobile robot

Owing to the applied drives, the robot smoothly overcomes uneven terrain and obstacles up to an angle of 45°. The robot is characterised by excellent manoeuvrability.

Low weight makes it easy to transport and carry the robot, and its modular design allows for quick and easy change of additional equipment.

PIAP GRYF® is a robot used for reconnaissance of terrain and hard to reach places. The manipulator with 5 degrees of freedom allows to lift loads weighing up to 15 kg.

Robot's wheels can easily be removed, which reduces the dimensions of the robot and thus facilitates missions in tight spaces.

TECHNICAL DATA:

Dimensions of the mobile base with extended front flippers and manipulator and main camera mounted (length x width x height):	95 x 60 x 55 cm
Approximate total weight of the robot with manipulator, camera head and battery	47 kg
Maximum speed of the robot (without accessories):	Up to 6,5 km/h
Maximum radio transmission range in open area:	Over ≥800 m
Maximum lift capacity close-in at the front / fully extended at the front:	15 kg / 5 kg
Manipulator reach:	Vertically: 222 cm - from the ground 237 cm - leaning on the flippers Horizontally: 135 cm - from the edge of the tracks 184 cm - from the rotation axis
Operating time from fully charged battery:	2 h, possibility of quick battery replacement

* All weights and dimensions are approximate and details are subject to change without notification.

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PIAP PATROL®

Robot for C-IED and CBRN tasks

Manipulator with 6 degrees of freedom and gripping function enables to lift and disposal loads up to 22 kg with maximum reach of 2 m.

PIAP PATROL® is a medium tracked robot used for detection and neutralization, which can support operators in the most dangerous tasks.

The robot design ensures the use of several accessories at the same time. Lightweight robot control panel is integrated with mobile x-ray systems and CBRN sensors. Robot's dimensions and applied drive system allow to carry out activities both inside buildings and in difficult terrain and compactand modular design allows it to be transported even in a passenger car.

TECHNICAL DATA:

Dimensions (length x width x height) in stowed position:	98 x 57 x 65 cm
Weight (without accessories) of the robot with manipulator and battery:	97 kg
Maximum Speed	8 km/h
Operating time (mission-dependent, possibility of quick battery replacement):	5 h
Maximum radio transmission range in open area:	800 m
Maximum lift capacity close-in at the front: fully extended at the front:	30 kg 6,5 kg
Maximum reach horizontal-from the vertical rotation axis:	199 cm
Maximum reach Vertical-from the lower edge of the tracks:	243 cm

* All weights and dimensions are approximate and details are subject to change without notification.

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PIAP FENIX®

Lightweight reconnaissance robot

PIAP FENIX® robot is easy to transport – owing to its small size and low weight it can be carried in a backpack.

The robot, depending on its equipment, can serve either for surveillance, lifting and neutralization of dangerous loads or for transport of sabotage measures.

It has been created to conduct reconnaissance in the immediate vicinity of military operations, including places inaccessible to humans.
PIAP FENIX® robot is unique with its operating time (up to 6 hours).
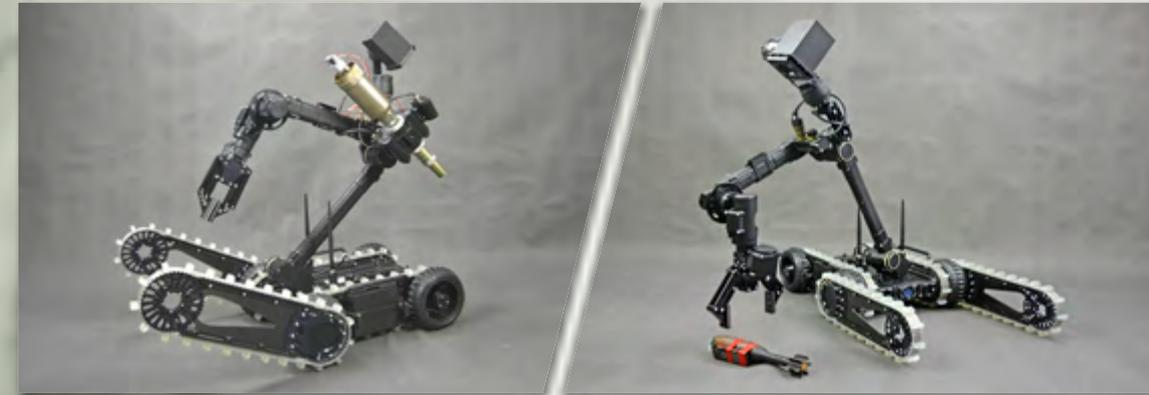Cameras (optionally: thermal, night vision) mounted on the robot's mobile base allow to conduct day and night surveillance.

Excellent field properties of PIAP FENIX® robot (track-wheels chassis with moveable front flippers) ensure easy movement on hardened road surface, dirt roads, pathless tracts and in urban areas.

TECHNICAL DATA:

Dimensions of the robot without antennas and front flippers (length x width x height):	60 x 54 x 46 cm
Weight of the mobile base with batteries:	22 kg
Maximum speed:	5 km/h
Range in open field:	400 m
Maximum lift capacity of the manipulator:	8 kg
Maximum horizontal range of the manipulator (from the end of the mobile base):	122 cm from the lower arm rotation axis
Operational work time (depending on the type of mission, possibility of quick battery replacement):	Approx. 5 h

* All weights and dimensions are approximate and details are subject to change without notification.

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PIAP IBIS®

Robot for pyrotechnic operations and reconnaissance

PIAP IBIS® is a fast robot (10 km/h). Special design of mobile base suspension ensures optimum wheel contact with the ground. Precision drive system ensures fluidity of the movement of every part of the robot, at any speed.

Manipulator with extendable arm ensures a large reach (over three meters) and a high range of motion in each plane. The manipulator lifts loads weighing up to 50 kg.

PIAP IBIS® is a robot for pyrotechnic operations and reconnaissance. Upon installation of additional devices, it can be used, among others, for disposal of dangerous objects, chemical detection and rescue operations.

Six-wheeled chassis with independent drive of each wheel allows to operate in challenging and varied terrain (bedrock, wetlands, muddy terrain and debris).

MODERNIZED VERSION

fot. Anna Jurczak

fot. Anna Jurczak

TECHNICAL DATA:

Dimensions of the robot in stowed position (length x width x height):	135 x 88 x 125 cm
Approximate total weight of the robot (without accessories):	320 kg
Maximum speed of the robot (without accessories):	10 km/h
Maximum radio transmission range in open area:	1000 m
Maximum lift capacity - close-in at the front: - fully extended at the front: - close-in on the side: - fully extended on the side:	50 kg 30 kg 50 kg 15 kg
Manipulator reach:	Horizontally: 220 cm – from the ground Vertically: 330 cm – from the rotation axis
Operating time from fully charged battery:	Approx. 4 h, possibility of quick battery replacement

* All weights and dimensions are approximate and details are subject to change without notification.

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PIAP HUNTeR

PIAP HUNTeR combat robot & ZMU-03

PIAP HUNTeR reaches a maximum speed of up to 50 km/h. Equipped platform was equipped with six high-resolution cameras.

Additionally for control and detection the enemy may be supported by the vision systems used in the unmanned aerial vehicle AREX ZMU-03 turret. Meter diameter wheels combined with a 4x4 drive system give robotic platform with high off-road capability.

PIAP HUNTeR is a Polish unmanned land vehicle. The robot can serve to observe and patrol borders, military, or urban areas, as well as for fire support of light infantry or protection of a column of troops mechanized. PIAP HUNTeR is equipped with daytime cameras and thermal imaging as well as a radio communication system.

PIAP HUNTeR weighs over 4 tons, is 470 cm long and 220 cm high width, wheelbase 220 cm. The vehicle has a hybrid drive, which includes a power generator and electric traction motors. The power supply system used allows the robot to operate for a long-time noiseless movement in electric-only mode.

fot. Anna Jurczak

fot. Anna Jurczak

The vehicle is equipped with a 3-link dependent suspension with a Panhard rod coil springs and shock absorbers with controlled damping. Łukasiewicz-PIAP used a differential lock and two steering axles.

The PIAP HUNTeR robot is presented in the configuration of an equipped reconnaissance platform in the ZMU-03 unmanned turret. The module is armed with a large-caliber rifle 12.7 mm machine gun and smoke grenade launchers.

The ZMU-03 lightweight tower system was developed by the Automation and Devices Department AREX measurement equipment (a WB GROUP company). In addition to its weapons, it has a warhead observation deck with daytime and thermal cameras, as well as a laser rangefinder.

ZMU-03 is equipped with a weapon and observation head stabilization system. The weapon module can automatically detect and track selected objects precisely observe targets and fire accurately even while moving carrier in difficult terrain. The tower can be controlled using a portable one PIAP HUNTeR robot console or U-GATE Personal Command and Observation System developed by WB GROUP

PIAP IBIS TRANSPORT®

Robot for transport operations and medical evacuation

The device has been adapted to transport all types of equipment and supplies, including light infantry load, such as backpacks, ammunition or hand-held single-shot anti-tank launchers, or to transport the wounded using a quickly, easily and stably mounted TALON II 90C stretcher.

PIAP IBIS in the transport and medical evacuation version. It is a 6-wheeled mobile platform with all wheels driven and adaptive suspension ensuring optimal contact of the wheels with the ground and, consequently, high mobility. Instead of the standard robotics manipulator, a basket with a stretcher attachment was installed. MOLLE system panels are mounted on the sides of the basket, enabling the installation of various equipment (e.g. medical backpack). There are foldable shelves on both sides of the robot to expand the loading area. The maximum speed of the robot is 10 km/h, its own weight is 250 kg and the maximum load capacity is 200 kg (depending on the type of terrain and mission).

The PIAP IBIS robot can be controlled from the PIAP HUNTeR robot control panel and can serve as observation support thanks to the installed PTZ head with a day-night camera with zoom and a thermal imaging camera. Radio control of a smaller robot in a network with a PIAP HUNTeR combat robot allows for mutual transmission of a radio signal, extending the operational range of one or the other unmanned platform.

Both vehicles are equipped with a GNSS-based positioning system, which makes it possible to display the position, geographical coordinates and direction of robot movement (heading) on the map of the control panel, on which the route can also be marked.

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PIAP EOD PICKUP

EOD & CBRN Rapid Response Vehicle

PIAP EOD PICKUP is a platform of high mobility allowing for quick relocation and implementation of tasks in all conditions such as urban areas or in difficult (unpaved) terrain.

The vehicle is designed for transporting mobile robots and accessories necessary during the operation. Adapted to carry 4 officers with personal equipment.

The pickup has an easily accessible loading surface along with the body enabling safe placement of specialist equipment, in accordance with individual user requirements.

In addition, the vehicle is equipped with a hook designed to tow a trailer up to 3500 kg.

We declare willingness to modify the vehicle and optional equipment according to the user's needs.

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PIAP EOD VAN

EOD VEHICLE Type VMA1 basic tool for bomb squad technician.

The vehicle is allows to carry a mobile robot with all the equipment necessary to counteract risks associated with explosives. Innovative multi-source electric power supply system gives energy independence in the place of action.

FOR A SPECIAL REQUEST

TECHNICAL DATA:

Max gross weight	5 t
Max load capacity	1,6 t
Length	7 m
Width	2 m
Height (unladen)	2,8 m
Wheel base	4,3 m
Front axle	Increased load capacity
Springs and dampers	Reinforced
Roof	High
Trailer coupling	2 t or 3.5 t, ball headed
Side door	Right, sliding

We declare willingness to modify the vehicle and optional equipment according to the user's needs.

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PIAP MOBI TARGET

Robotic Shooting Training System

Robotic target moves on long distances (up to 1200 m) - this allows for sniper training, where shooters can fire at long distances.

PIAP MOBI TARGET has been developed with modularity in mind, which allows for configuration according to individual customer requirements.

Depending on the configuration, it is possible to install paper target holders (basic variant) or a 3D dummy lifter equipped with a hit detection and parameterization system (advanced variant) on mobile platforms.

PIAP MOBI TARGET is a tool for conducting advanced shooting training. It is intended for training and improving the skills of officers of the services responsible for state security and defense, as well as armed security guards and sport shooters.

PIAP MOBI TARGET consists of a mobile platform, operator's control panel (with training interface) and a relay station. The system's advantage is its mobility, the ability to move quickly and complete independence from the existing communication infrastructure.

PIAP MOBI TARGET can operate in close proximity to each other and in the vicinity of local obstacles on the shooting range.

TECHNICAL DATA:

Dimensions of the mobile platform with a lift (length / width / height)	100/90/96 cm
Mass	380 kg
Maximum speed	10 km/h
Possibility of smooth speed regulation in the whole range from zero to maximum speed using the joystick of the Operator's Control Panel	0–10 km/h
Driving system	Wheels
Gradeability	Up to 20°
Lateral tilt	Up to 25°
Maximum range of radio transmission in open area	1200 m

* All weights and dimensions are approximate and details are subject to change without notification.

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FOG FSG System

The transmitter is equipped with a high-resolution transflective display that allows you to read the most important information such as network conductivity, battery charge, range strength, and security status. Thanks to the variety of transmitters - single-channel, single-channel lightwaight, four-channel, ShockTube - you can plan activities to minimize the necessary amount of equipment and space.

The range can be doubled using a signal amplifier, so that the connection between the transmitter and the receiver can be established without any problems even in difficult environmental situations in open areas up to 18 km.

The radio detonation system (FSG) for remotely initiating electric detonators and pyrotechnic charge initiators offers a maximum of safety and accuracy due to its simple and intuitive operation. Since its introduction in 2008, the FSG system has been continuously updated together with users and constantly adapted to the current state of the art.

Functions such as receiver pairing, time-delayed conversion or the doubling of the range with the aid of a repeater enable the radio remote ignition system to be used for a wide range of applications. Transmitter and receiver communicate via an encrypted bidirectional radio link which allows the receiver status to be displayed on the high-resolution display of the transmitter at any time. The integrated field strength and resistance measurement provides the most important information. The FSG detonation system, developed and manufactured in Germany, enables safe and simple actuation of electric and non-electric detonators via radio.

TECHNICAL DATA:

4 CHANNEL TRANSMITTER

Dimension:	77 x 131 x 32 mm
Operating temperature:	–20 to 65 °C
Weight:	330 g
Standby:	up to 10 h
Power source:	2 x CR123A (3 V)

1-CHANNEL RECEIVER

Dimension:	152 x40x40 mm
Operating temperature:	–20 to 65 °C
Weight:	159 g
Standby:	up to 10 h
Power source:	1 x CR123A (3 V)

4-CHANNEL RECEIVER

Dimension:	65x112x65 mm
Operating temperature:	–20 to 65 °C
Weight:	540 g
Standby:	up to 16 h
Power source:	4 x CR123A (3 V)

SHOCK-TUBE RECEIVER

Dimension:	65x112x65 mm
Operating temperature:	–20 to 65 °C
Weight:	573 g
Standby:	up to 16 h
Power source:	4 x CR123A (3 V)

* All weights and dimensions are approximate and details are subject to change without notification.

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RDS – RICHMOND DEFENCE SYSTEM

MiniBlitz

The CSL 12J Mini Blitz is a single channel high powered electronic exploder capable of initiating conducting cap ignited cartridges in addition to the regular bridgewire fuse head which is a feature of most electrically initiated cartridges and Detonators. Conducting cap ignitors require a higher current over a longer period to successfully initiate. Mini Blitz features a dedicated port for shock tube. It can be used for both electrical initiation via firing cables or shock tube. Mini Blitz features a built in digital meter which gives both firing line resistance and battery level.
Powered by 4 x CR123A Lithium-Ion Batteries which are available worldwide.

TECHNICAL DATA:

Size:	198 mm x 55 mm x 52 mm
Unit Weight:	600 g
Output Connections:	Single Firing Circuit
Batteries:	4x CR123A Lithium-Ion Batteries (minimum of 1000 firings)
Operating Temperature Range:	-20°C to +55°C (arming time increases at low temperatures)
Storage Temperature Range:	-40°C to +70°C
Immersion:	IP67
Output Energy:	Typically 12J
Arming Time:	Typically 3 seconds

* All weights and dimensions are approximate and details are subject to change without notification.

VULKAN MAXI DE ARMER DISRUPTER SYSTEM

RDS 50-40 VUL, CSL 50-40 VUL

The VULKAN Disrupter System is a 4th generation maxi modular, variable projectile mass, recoilless equipment which can be configured as:

- Close Up De Armer using plain slug or chisel slug against UXB fuses.
- Stand Off De Armer using spin stabilised plain slug at ranges up to 30m (100ft) against UXB fuses.
- Close Up De Armer using blade projectile typically against pipe bombs and certain other IEDs.
- Close Up Disrupter using either 200ml or 300ml of water in C-IED applications.
- Stand-off disrupter using 200g spin stabilised frangible projectiles at ranges of up to 30m (100ft) and beyond in C-IED applications and in breaching/entry SWAT operations etc.

Unique features of the VULKAN include:

- 40 mm rifled barrel for stand-off applications.
- Gas regulator which varies gas volume to the compensator permitting the system to be completely recoilless for projectiles masses of between 200 g and 300 g.
- Powerful green lasers with enhanced safety features such as programmable time out. For safety Laser Sights feature automatic time-out and cannot be used independent of the turret and stand.

- Lasers feature contra rotating prisms which make zeroing quick and easy.
- The VULKAN is constructed in either tempered stainless steel or tempered titanium in situations where a very lightweight system, is desirable. The canon in titanium is approximately half the weight of the stainless steel version.

TECHNICAL DATA:

Stainless Steel Version - Weights & Dimensions*	
Cannon fully loaded - Stainless Steel Version	4.42 kg
Multi Position Stand on its own with Turret	5.34 kg
Cannon Loaded and ready for emplacement in Multi Position Stand	9.76 kg
Complete equipment in transit case including stand, inert consumables for ten firings and 3 off each projectile type	28 kg
Cannon overall length with 40 mm Rifled Barrel fitted, including Breech Plug	590 mm
Cannon overall length with Choked Water Barrel fitted, including Breech Plug	627 mm
Overall diameter across Compensator	80 mm
Transit Case dimensions	781 x 520 x 295 mm

* All weights and dimensions are approximate and details are subject to change without notification.

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VIPER DISRUPTER SYSTEM

RDS 50-30 VIP, CSL 50-30 VIP

Unique features of the Viper include:

- ✔ Gas regulator which varies gas volume to the compensator permitting the system to be recoilless for projectile masses of between 60, 100 and 150 g.
- ✔ 30 mm rifled barrel for long stand-off applications.
- ✔ The VIPER is available constructed in either tempered stainless steel or, in a super lightweight version, in tempered titanium.
- ✔ The Viper disrupter system utilises the same turret, sights and multi position stand as the Maxi VULKAN System.

The VIPER is a 4th generation 30 mm Midi Disrupter featuring, variable projectile mass and recoilless operation. It can be configured as:

- ▪ **Close up disrupter using either 60, 100 or 150ml of water or elastomer in C-IED applications.**
- ▪ **Stand-off disrupter using 150 g spin stabilised clay frangible projectiles at ranges up to 30 m in C-IED applications and in disrupting entry SWAT operations etc.**

TECHNICAL DATA:

Stainless Steel Version - Weights & Dimensions*	
Cannon on its own with Rifled Barrel complete but unloaded	2.46 kgs
Cannon on its own with Choked Water Barrel complete but unloaded	2.50 kgs
Cannon Loaded and ready for emplacement	2.99 kgs
Cannon mounted on Multi Position Stand with Laser Sights	8.33 kgs
Complete equipment in transit case including stand, inert consumables for ten firings and 3 off each projectile type	22 kgs
Dimensions of Transit Case, includes space for optional PIM and Power Pack	781 x 520 x 295 mm

* All weights and dimensions are approximate and details are subject to change without notification.

STENÓS II

14" x 17"

Features:
- ✓ IP67 and Glass-Free
- ✓ mm Bottom Border with 84% Fill Factor
- ✓ 0 µm Pixel Size, 3.57 lp/mm
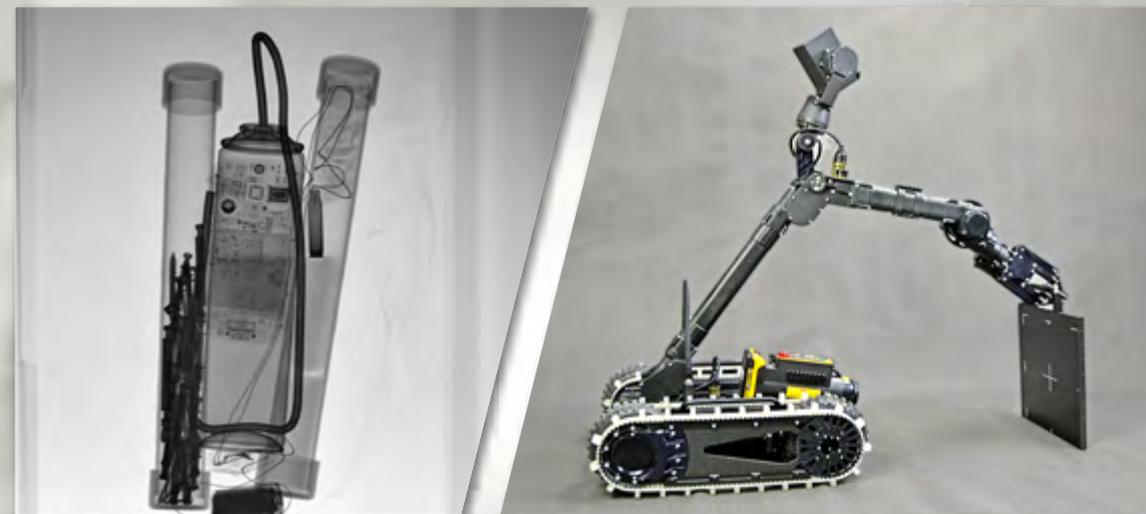- ✓ Up to 10 hours of operation on a single charge

Logos Imaging's STENÓS is our newest, biggest and most rugged DR Imaging System, with a 3 mm bottom border.

- Glass-free
- On-board calibration
- Zero RF signature on startup with on/off switch for wireless communications
- All batteries used in the system are removable
- Automatic Exposure Detection (AED) with no additional accessories
- Android compatible

LOGOS IMAGING

Sample image taken with XRS-3 (15 pulses) on STENÓS panel from 1 meter.

TECHNICAL DATA:

Technology	Amorphous Silicon with TFT
Weight	8.6 lb (3.9 kg) including battery
Battery life	5 hours
Dimensions (Panel)	15.2" x 18.1" x 0.6", 386.0 x 460.0 x 15 mm
Pixel Area	13.8" x 16.8", 350 x 427 mm
Pixel Size	140 µm
Limiting Resolution	3.5 lp/mm
AD Conversion	16 bits
Communications Interface	Wireless IEEE 802.11ac Wired LAN
Communications Range	Wireless 150 m with standard antenna*; Wired 25 m with standard cable reel; Additional network options available

*Line of Sight; *Line of Sight; higher gain antennas available for longer range.

* All weights and dimensions are approximate and details are subject to change without notification.

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XIRÓS II

12"x 12"

Logos Imaging's XIRÓS, the mid-sized DR Imaging System, is currently our most popular product.

- Glass-free
- On-board calibration
- Zero RF signature on startup with on/off switch for wireless communications
- All batteries used in the system are removable
- Automatic Exposure Detection (AED) with no additional accessories
- Android compatible

Features:
- ✔ IP67 and Glass-Free
- ✔ 3 mm bottom and side border with 80% Fill Factor
- ✔ 140 µm Pixel Size, 3.57 lp/mm
- ✔ Up to 14 hours of operation on a single charge
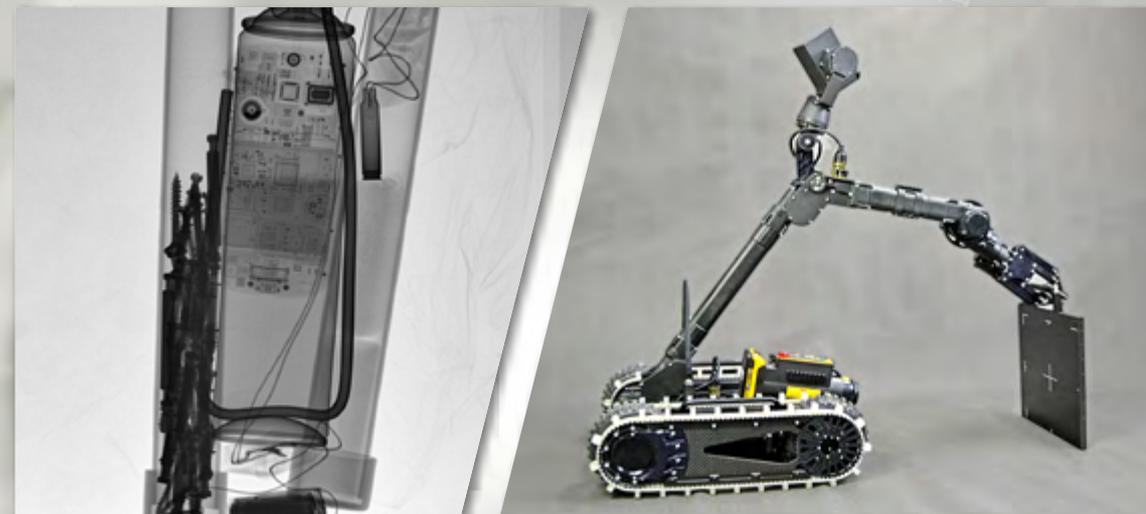
Sample image taken with XR150 20V (15 pulses)
on XIRÓS panel from 1 meter.

TECHNICAL DATA:

Technology	Amorphous Silicon with TFT
Weight	5.5 lb (2.5 kg) including battery
Battery life	7 hours (2 batteries in a kit)
Dimensions (Panel)	12.6" x 12.6" x 0.6", 320 x 320 x 15 mm
Pixel Area	11.3" x 11.3", 287 x 287 mm
Pixel Size	140 µm
Limiting Resolution	3.57 lp/mm
AD Conversion	16 bits
Communications Interface	Wireless IEEE 802.11ac Wired LAN
Communications Range	Wireless 150 m with standard antenna*; Wired 25 m with standard cable reel; Additional network options available

*Line of Sight; *Line of Sight; higher gain antennas available for longer range.

All weights and dimensions are approximate and details are subject to change without notification.

SOSTÓS II
10"x 10"

Logos Imaging's SOSTÓS complements the range of our newest and most rugged DR Imaging Systems.

- Glass-free
- On-board calibration
- Zero RF signature on startup with on/off switch for wireless communications
- All batteries used in the system are removable
- Automatic Exposure Detection (AED) with no additional accessories
- Android compatible

LOGOS
IMAGING

Features:
- ✔ P67 and Glass-Free
- ✔ 3 mm bottom and side border with 83% Fill Factor
- ✔ Under 11 lb (5kg) in typical backpack setup
- ✔ AED mode with no on-site connection needed
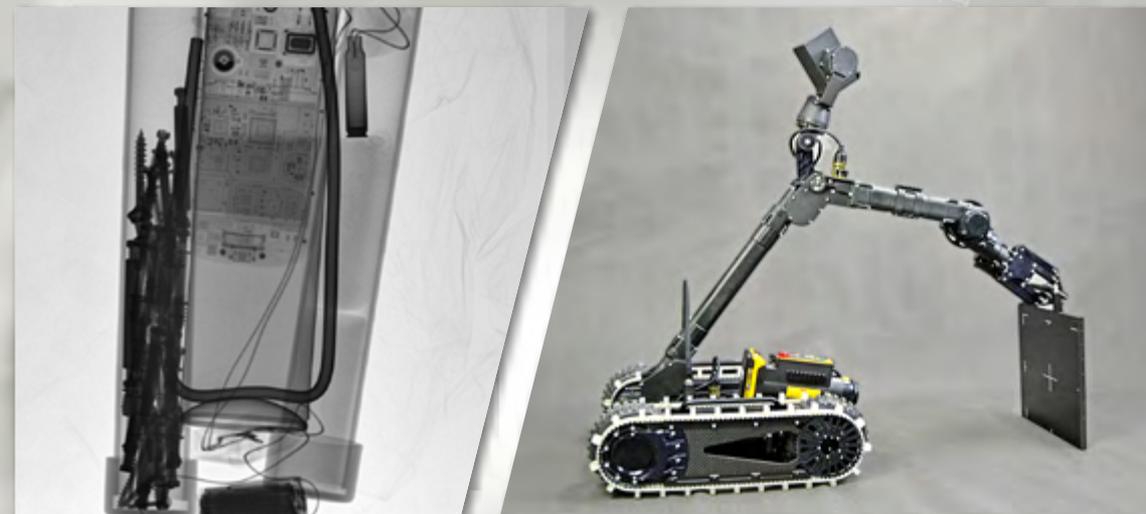
Sample image taken with XRS-3 (15 pulses)
on STENÓS panel from 1 meter.

TECHNICAL DATA:

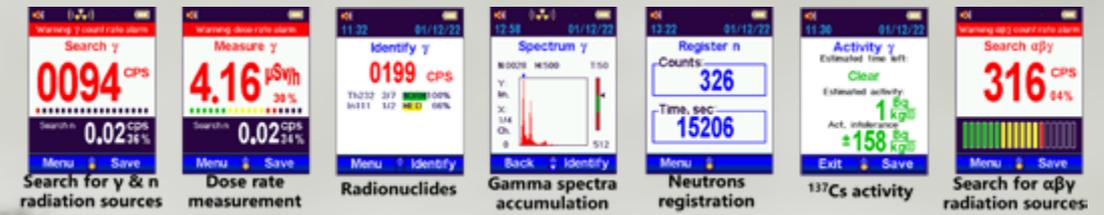|	
Technology	Amorphous Silicon with TFT
Weight	2.8 lb (1.3 kg) including battery
Battery life	3 hours
Dimensions (Panel)	11.02" x 11.14" x 0.6", 283 x 283 x 15 mm
Pixel Area	10.1" x 10.1", 258 x 258 mm
Pixel Size	168 μm
Limiting Resolution	2.98 lp/mm
AD Conversion	16 bits
Communications Interface	Wireless IEEE 802.11ac Wired LAN
Communications Range	Wireless 150 m with standard antenna*; Wired 25 m with standard cable reel; Additional network options available

*Line of Sight; *Line of Sight; higher gain antennas available for longer range.

All weights and dimensions are approximate and details are subject to change without notification.

MULTIPURPOSE MOBILE RADIATION MONITOR
PM1401K–3P

PM1401K-3 series of radiation monitors compromises a wide range of all-in-one devices for radiation detection, dose rate and contamination measurements, spectrometry and radionuclide identification.

PM1401K-3P model is the most advanced model in the series suitable for various radiation control tasks including measurement of ambient dose equivalent rate, detection of alpha, beta, gamma and neutron sources, measurement of alpha and beta radiation flux density, acquisition of gamma spectra, identification of radioisotopes, and measurement of food/soil contamination with ^{137}Cs.

The device is fully operated remotely using PIAP mobile robots.

POLIMASTER®
Radiation Detection Technologies

Search for γ & n radiation sources	Dose rate measurement	Radionuclides	Gamma spectra accumulation	Neutrons registration	^{137}Cs activity	Search for αβγ radiation sources

Applications
- Customs and border control
- HAZMAT and CBRNe teams
- Emergency services
- Police and security
- Industrial facilities
- First responders

Features:
- Storage of up to 10000 events and 1000 spectra
- Audible, visual and external vibration alarm
- Categorization of identified radionuclides
- Shock and water resistant IP65 case
- Adjustable radionuclide libraries
- USB communication with PC
- Built-in GPS module

SPECIFICATIONS:

Detector	gamma	CsI(Tl); GM counter
	neutron	^{6}LiF/ZnS
Gamma sensitivity	for ^{137}Cs	200 cps per µSv/h
	for ^{241}Am	2000 cps per µSv/h
Neutron sensitivity	for Pu–α–Be	0.15 cps·cm^2
	for thermal neutrons	5.0 cps·cm^2
Energy range	gamma (spectroscopy)	25 keV to 3 MeV
	gamma (measurement)	15 keV to 15 MeV
	neutron	thermal to 14 MeV
Dose rate measurement range		0.1 µSv/h to 100 mSv/h
Dose rate measurement accuracy		$\pm(15 + 0.0015 / \dot{H})$ %, where $\dot{H}$ is the measured dose equivalent rate value in mSv/h
Resolution		≤ 9 % FWHM at 0.662 MeV (^{137}Cs)
Gamma radiation scintillation spectra acquisition		1024 channels
Radionuclide library		3 extensible and editable libraries (ANSI N42.34 compliant, IND, MED, NORM, SNM categorization)
Flux density measurement range	alpha	15 to 10^5 min^{-1}·cm^{-2}
	beta	6 to 10^5 min^{-1}·cm^{-2}
^{137}Cs activity measurement range		10^2 to 10^5 Bq/kg (Bq/l)

Warm-up time	< 90 s	**Ingress protection**		IP65
Memory	10000 events, 1000 spectra	**Drop test**		0.7 m
Alarms	visual, audible, external vibration	**Dimensions**		262 × 60 × 65 mm
Communication	USB	**Weight**		≤ 820 g
Power supply	2 AA alkaline or NiMH batteries	**Operating conditions**		
Battery lifetime (normal radiation background, active alarms and LCD backlight < 5 min/24 h)	≥ 300 h	- ambient temperature - atmospheric pressure - relative humidity		−20 °C to 50 °C 84 kPa to 106.7 kPa up to 95 % at 35 °C

Set of accessories for ^{137}Cs activity and αβ flux density measurement

Telescopic extension pole for remote operation and surveys in hard-to-reach areas

PM1401K-3 Desktop Software for adjusting instrument settings, downloading the operating history and analyzing the gamma spectra

**Measurement results are displayed in real time on the control panel of PIAP robots**

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CBRNE Accessories

ENVIRONMENTAL SWAB

The tool is designed to obtain material for chemical or biological laboratory analysis by taking swabs from the surface of objects, on which hazardous substances may accumulate. The tool is transported in a holder mounted to the Picatinny rail on the robot's mobile base and it's picked with the manipulator for the time of sample collection. The tool is delivered with a basic set of consumables.
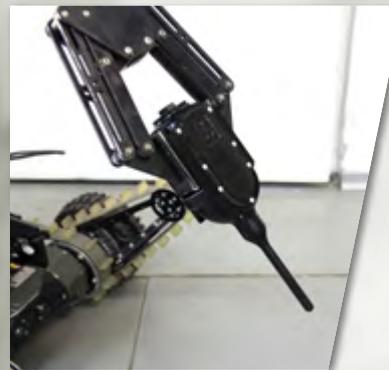
SPME ADSORBER

The device is dedicated to acquiring chemical particles from the air and liquids onto the SPME fiber for laboratory analysis, e.g. in a gas chromatograph. It can be transported on the Picatinny rail on the mobile base or the manipulator as well as in the gripper's jaws and controlled from the robot's console. The device is delivered with a basic set of consumables.
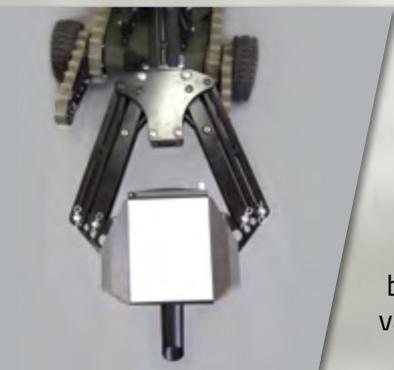
GROUND SAMPLER

The tool serves to take samples of the substrate (earth, sand, snow, etc.) for laboratory analysis. It's transported in a holder protecting the robot and personnel against contamination by the collected material and it's picked with the manipulator for the time of sample collection. The holder is mounted to the Picatinny rail on the mobile base of the robot. The tool is delivered with working tips for various substrates and a basic set of consumables.

C–Sensor (LCD 3.3)

Device for the detection of the chemical warfare agents (CWAs) and the toxic industrial chemicals (TICs), based on the LCD3.3 detector by Smiths Detection. Information about detected substances is sent to the robot's console in real time. The operator can set alarms signaling the presence of particular threats on the console's screen. The device can be transported on the Picatinny rail on the mobile base or the manipulator as well as in the gripper's jaws. The device is delivered with a basic set of consumables.

CBRNE Accessories

MODULAR LIQUID SAMPLER

The device is designed to take samples of liquids from open containers (e.g. bottles or jars) and the recesses of the substrate. Owing to the use of an external sampling line, obtaining collected sample does not require disassembling the device. It's carried in the gripper's jaws and controlled from the robot's console. The device is delivered with a basic set of consumables.

WEATHER STATION

The device allows to make meteorological measurements in the area of the robot's operation, in terms of: wind strength and direction, temperature, precipitation, air pressure and humidity. This information is particularly important in incidents related to CBRN contamination, as it allows to estimate the direction of contamination spread in the form of vapors or dust and to facilitate the planning of tasks depending on the prevailing weather conditions. Measurement data from the station are sent to the robot console in real time. The device is transported on a Picatinny rail on a mobile base.

R-SENSOR (ZR-1)

A device enabling omnidirectional measurement of the gamma radiation dose rate absorbed in the air, based on the ZR-1 detector by Polon-Alfa. Measurement information is sent to the robot's console in real time. The operator can set alarms signaling the presence of the certain level of the particular radiation on the console's screen. The device can be transported on a Picatinny rail on the mobile base or the manipulator. Does not require any consumables.

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